

Interface

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In March of this year, Cray Research introduced a new operating system, UNICOS. How is the company helping customers who want to move to UNICOS? What do the experiences of our first UNICOS customers tell us about software migration? These and other issues were discussed when people throughout the company met in Minneapolis early in November.



Whether it's helping customers identify needs or providing tools to help with software migration, members of the Software Migration Planning Committee tackle many challenges associated with software migration. From left: Lori Hannon, Tuan Low, Sheryl Haefer, and Brent Knight.

Software migration: tackling the challenge

When the UNICOS operating system was introduced in March of this year, it introduced new features and capabilities for Cray customers. At the same time, it raised many questions about how the company will address the issue of software migration.

What is software migration? What is the company doing to help customers assess their needs? What do the early experiences of Cray customers and Cray people tell us about the challenges? In the short time since UNICOS was announced, these and many other questions have been answered.

Migration is the movement of customer applications from one operating system to another. However, you can't completely separate where you are going from the path getting there. This belief is guiding the company's efforts for software migration.

Whether it's helping customers identify needs or building functionality into Cray's software, both the product and the process are important to success.

Migration has two components. One issue deals with the task of marketing, staffing, and attending to management challenges associated with changing software. These management challenges are being handled through normal operational channels. A second issue deals with what people need to do to move their programs from the Cray Operating System (COS) to UNICOS. This is a technical issue that includes software development, training, documentation, applications, and technical support. To deal with these issues, the company established the Migration Planning Committee.

Judy Braun, manager of Cray's system support group, chairs the committee, which started meet-

ing in November of 1985. The committee includes one representative from each region, subsidiary, and functional area.

"Part of our responsibility is to address issues that might otherwise be unfocused or randomly scattered. We collect issues and serve as a dispatch center — a single place to find information relating to software migration," Judy explains. "There is structure to the group, but it also maintains an informal style that encourages anyone with a need or concern to attend the monthly meetings."

Among the committee's responsibilities is providing migration tools for customers and Cray people. "Tools are not just software products, they are documentation, training, and field support," emphasizes Ron Larson, regional tech support manager and committee member from Cray's Central Region. "This is why a team approach is important for software migration, and that's why the committee has a broad range of representation."

A glance at progress

When the Migration Planning Committee was first formed, several issues emerged immediately. Dave Sadler (MH) suggested that the committee maintain a list of the issues, and Dale Mays (MH) volunteered to establish the data base for tracking issues and progress. Whether the issues come from benchmarking, applications, regions, or directly from customers, Cray Research has an efficient and focused system for responding to these needs. Each issue is assigned to an appropriate Migration Planning Committee member for resolution.

From the very beginning, training was viewed as an important part of the migration process, remarks Phil Hernick, manager of software training.

"Our involvement includes offering several migration courses, which include programs on migration planning, migration skills, UNIX to UNICOS training, and a whole curriculum of UNICOS courses."

Publications also has been extremely active in assisting customers and Cray employees with understanding differences between COS and UNICOS. Documents provide general information about UNICOS, help assess the customer's environment, assist in defining system requirements, and offer information on the technical aspects of software migration. "As time passes and more people have experience with software migration, we are finding that people at the sites are the most valuable sources of information," notes Pat Troolin, who has been overseeing migration documentation in Mendota Heights. "Their feedback is very useful. Anyone with experiences or ideas about improving the process should call either me, Judy Braun, or another member of the migration committee."

Committee members share an enormous amount of dedication

(continued)



Robyn Riehm (left) and Judy Braun document issues raised by the Software Migration Planning Committee. Judy chairs the committee, which serves as a dispatch center for information and issues relating to software migration.

Major milestones include:

Formation of a Migration Planning Committee that offers a solid focal point for gathering experiences and tools. The committee resources are available to people throughout the company.

Training is being offered both domestically and internationally. This training includes courses on migration skills, migration planning, UNIX to UNICOS differences, and a whole curriculum of UNICOS training.

Migration documentation is available through the Distribution Center.

The Guest Operating System (GOS), which allows UNICOS to run under COS, has been enhanced to use an internal station, tapes, and dynamic memory.

Several software tools are being developed.

- 1) A PDS dump to ar file formatting tool helps move files from COS to UNICOS.
- 2) A JCL converter that changes COS JCL to UNICOS commands is available and useful for some conversions.
- 3) Pre-migration site analysis tools analyze a site's use of COS.
- 4) A CAL converter is available. This converter translates Cray Assembly Language (CAL) on a CRAY X-MP system to CAL on a CRAY-2 system.
- 5) A library conversion aid is available to help identify COS program library references that are unsupported under UNICOS.

Representatives of Migration Planning Committee:

| | | | |
|--------------------|--|-------------------|-----------------------------------|
| Rob Blaine | Petroleum Region | Mike Merchant | Compilers (MH) |
| Vito Bongiorno | Marketing (MH) | Jim Miller | UNICOS CRAY-1 (MH) |
| Judy Braun | Software Development (MH) and committee chair | John Murray | Cray UK |
| Mike Carney | Software Coordination (MH) | Peter Rigsbee | Libraries and Product Set (MH) |
| Paul Clark | Cray Canada | Dennis Scoggins | Western Region |
| Claude Cohen | Cray France | Heinz Schneider | Cray Germany |
| Sheryl Haefer | Technical Support (MH) | George W. Schultz | Special Systems |
| Phil Hernick | Training (MH) | Pete Sydow | Benchmarking (MH) |
| Cal Kirchhof | Applications (MH) | Dave Thompson | Communications (MH) |
| Brent Knight | Technical Support (MH) | Pat Troolin | Publications (MH) |
| Richard Lagerstrom | Software Development (MH) | Kazuya Terauchi | Cray Japan |
| Ron Larson | Central Region | Rick Tillbrook | Eastern Region |
| Tuan Low | UNICOS CRAY-2 (MH) | Dave Wallace | Western Region |
| Tom Mahoney | Technical Operations (MH) | Bing Young | CTSS |
| Tracy McCory | Western Region | | |

and volunteerism. Members from all functional areas step forward and see that the issues are addressed. That pride and ownership has brought about many accomplishments in the past year.

One of those accomplishments is Cray's UNICOS System Call Protocol (USCP), which allows existing stations to talk to UNICOS without conversion. This product will be available with release 2.0 of UNICOS.

Another major accomplishment is the availability of the Guest Operating System (GOS), which was originally a tool for software development. GOS allows UNICOS to run under COS on CRAY X-MP systems with two or more processors. As a result of the Migration Planning Committee, GOS was identified as a valuable migration tool and was enhanced and made available for customer use. There are five additional software migration tools that will be available by year-end.

Challenges ahead

In 1986, the challenge for software development was to show that an operating system based on UNIX was feasible on a Cray mainframe. It had to per-

form, and it had to perform well. In 1987 the challenge will be to take the same functions that took ten years to develop in COS and build them into UNICOS in approximately one year. "It will be challenging but I believe we can do it," says Gayle Smith.

With each new installation, the company's experience level grows. The company's first experience with UNICOS took place at NASA in October of 1985 on their CRAY-2 system. Next was Bell Labs in December of 1985 with a CRAY X-MP system. Today, at least twelve customers are running UNICOS either as a native operating system or as part of GOS.

"The experiences of our first customers migrating their software are going to be very important," emphasizes Tuan Low. "These pioneering efforts will help us assess the ease or difficulty of migration and help us to improve the migration process and tools. Positive experiences here would greatly help to win future converts more quickly."

Goals of customer satisfaction

Cray Research will support COS as long as customers choose to

run it. At the same time, the company's goal is to help customers see for themselves the advantages of UNICOS. A better software product is the company's objective. "We want to make UNICOS an appealing product for our customers — a product with features and performance that are worth the conversion effort," says Gayle Smith. "An advance in software technology, a better way of supporting our hardware, better reliability, and improved performance — these are the objectives for UNICOS. We have succeeded if customers migrate to UNICOS because they have a better system for solving their problems."

Reaching this objective will require effort by every person at Cray Research. "The whole company is responsible for migration," says Judy Braun. "Cray people must understand UNICOS. They must work with development organizations, go to classes, read the publications, and use the new operating system. Helping customers make a smooth transition is a company-wide effort."

Support staff soars to success

"When one of us does well, we're all a little better for it," was the motto of the 1986 Support Staff Seminar conducted in Eau Claire, Wisconsin this past October.

The objectives challenged and met at this year's seminar included an increased camaraderie among Cray's support staff and an exchange network for finding creative solutions to current issues. To help develop

an increased understanding and appreciation of Cray and its products, tours of the Printed Circuit, Systems Test, and Manufacturing buildings in Chippewa Falls also were conducted.

Participants said the seminar was very worthwhile. "This type of seminar enables support staff throughout the company to share information, resources, and tools," said Katie Titus, seminar task force member.



Lorene Wolske (left) and Colleen Pace (right) enjoy a unique networking opportunity with Support Staff seminar consultant, Audrey Cenedella.

New tax facts

Consumer magazines, newspapers, and tax advisors are actively looking at the practical side of the new tax laws. After reviewing what they have to say, *Interface* collected this list of facts that might be helpful in your tax planning.



- Many miscellaneous write-offs that are deductible through December of 1986 may not be allowed in 1987. Some of these items include: subscriptions to professional journals and investment publications, fees for tax and investment advice, union and professional dues, safe deposit box fees, job-hunting costs, and work-related education expenses. They are deductible this year, but in 1987 or thereafter, they are deductible only to the extent that they exceed 2% of adjusted gross income.
- Deductible consumer-loan interest, such as that on credit cards, will be phased out over the next few years. Eventually, only interest on a first or second home will be deductible.
- Out-of-pocket medical expenses are those costs that are not covered by insurance or company reimbursement plans, such as Cray's Health Care Expense Account. In 1986, out-of-pocket medical expenses that exceed 5% of adjusted gross income are tax deductible. In 1987, there will be a new limit for these expenses. Only expenses in excess of 7.5% of adjusted gross income will be deductible.
- The new tax bill eliminates deductions for IRA contributions by those whose adjusted gross income exceeds \$50,000 (\$35,000 for singles) who ALSO are covered by employers' pension plans. (Note that Cray's Deferred Profit Sharing and Investment Savings Plan is considered a pension plan). The IRA deduction will be reduced for taxpayers who are covered by pensions and whose incomes are up to \$40,000 (\$25,000 for individuals). A worker covered by a pension with a family income of \$45,000 would be allowed to deduct only \$1,000 plus \$125 for a non-working spouse.

For purposes of this presentation, the above rules have been simplified. If you are thinking about entering into any tax transaction, it would be advisable to consult an accountant or tax attorney.



A spark of *Creativity*

It all begins in kindergarten. Your teacher, the one with the bluish-gray hair and rhinestone-speckled glasses, tells you to draw a picture. So, you pick up the green crayon and outline the sky. You take the blue to color the sun. You take purple to draw polka dots on your dog. Only a few minutes and one lecture later, you learn that the sun is yellow, the sky is blue, and dogs, unless they are very sick, do NOT have purple spots.

At a young, impressionable age, you have your first experience with the "One Right Answer Syndrome." Unfortunately, it isn't your last. Much of our educational system is geared toward teaching people one right answer. Although this is fine in areas

such as calculus and geometry, much of life is not this clear-cut. To any one question, there are many right answers, and the power of imagination and creativity is necessary to find them.

"Nothing is more dangerous than an idea when it is the only one you have," writes Emile Chartier, the French philosopher. Chartier is saying that the consequence of one right answer is that there is only one course of action. In a world where flexibility is a requirement for survival, this can be hazardous.

Likewise in the supercomputer industry; flexibility, creativity, and innovation are necessary for survival, let alone success. Stopping with the first right answer might not be the best alternative. The second or third or fiftieth

answer might hold the key to success. The culture at Cray Research encourages creativity in all areas — from research and development to administrative decision-making. Through decentralization and the expression of confidence in employee talents, people at Cray Research are invited to explore creative alternatives when searching for ideas, making plans, and implementing decisions. "Both people and creativity can flourish in an environment where procedures are used as a guideline and not as a policy," says Mickey Edwards, analyst manager in the petroleum region. "Cray Research reinforces creativity by providing a work environment that fosters innovation."

At Cray Research, we take what we do very seriously, but we don't take ourselves too seriously ... People also have fun working at Cray Research. There is laughing in the halls, as well as serious discussion.

Triggering a certain attitude for creativity is just as important as maintaining a particular environment. A key element to finding that creative spark could be developing the ability to think like a child. Sometimes, the biggest stumbling block to innovation is when people take themselves and their subjects too seriously. This does not mean that a subject or purpose is not important, but rather, that sometimes seeing the world through the wonder and freshness of a child's eyes will produce special insight.

Ideas are something to play with. They are conceived in an atmosphere of openness, excitement, and fun. They are born when people have essential information about a subject, but not too much. They grow as people twist and turn them against specific objectives, and they develop as they are researched to see if they really could work. Finally, ideas mature when they are shared with others, when feedback is assessed, and when they are modified to perfection.

With informality, however, there is also a sense of confidence ... It is this sense of confidence that generates the attitude of 'go ahead and try it, we'll make it work.'

Rules for childhood games have remained the same generation after generation. In the world of high technology, however, there is no time for rules that have outlived the purpose for which they were intended. Cray

Research has maintained its leading position in the supercomputer industry by realizing that an innovator tosses out the rules — or in the case of design, challenges the existing technology. "At Cray Research, one rule that still exists is one that tells us to break the rules," comments Greg Pautsch, head development engineer working on a new project with Steve Chen. "If you follow the same rules today that you followed five years ago, the state of the art will not be challenged."

Reassessing the state of the art follows in all areas of the company, not just in computer design and development. "Being creative helps us to deal more effectively with the various problems and opportunities that this fast-paced business poses," continues Laura Wallace, human resource manager in the Central Region. "As a company, we are constantly on the cutting edge — doing things that have never been done before. This requires creative minds. In the field, for example, each new customer presents a potentially new application problem. When this new information comes into existence, it's not always possible to solve

today's problems with yesterday's solutions. We need to use creativity to find new answers, new solutions, and new ideas."

Cray Research is many things to many people. The consistency comes in providing those diverse people with the opportunity to fulfill themselves and experience achievement ...

Creativity is like playing the piano, or mastering tennis — it's a skill that you can learn, practice, and improve. Creativity is also like a muscle — if exercised, it is strong and useful. If neglected, creativity atrophies. Creativity is fostered both internally and externally. There is a need for attitudes that allow you to search for ideas and manipulate your knowledge and experience. An environment that provides the space needed to breed and incubate those ideas also is needed. Cray Research encourages such an environment, but ... "the creativity, then, that emerges from the company comes from the many ideas of the individuals who are here."

A Kick In The Seat Of The Pants

For anyone wanting to be more creative, *A Kick In The Seat Of The Pants*, by Roger von Oech (Harper and Row, 1986), may be just what the doctor ordered. It combines the fun of a workbook with near-immediate rewards for the effort it demands. No doubt, it will jog your creative juices into a state where you will see and think things you never have before. The book places the reader in four creative roles — explorer, artist, judge, and warrior. These roles produce hard-hitting and practical approaches to becoming more innovative. You will explore a variety of topics ranging from how to find ideas you already have to

how to look at a problem backwards. You will also discover how to slay a dragon and how to put a fire in your belly and a lion in your heart.

Examining the four roles in the creative process can be useful to all of us at Cray Research. With a shared mission of continuing to produce the world's fastest supercomputers, the people in this company know that an innovative outlook is necessary. In the words of the Cray Style: "The creativity, then, that emerges from the company comes from the many ideas of the individuals who are here. And that is the real strength of Cray Research."



Manager of Shareholder Communications, Laura Merriam

An investment in Cray's shareholders

In 1972, a small group of people organized a company with a mission to design and manufacture a large-capacity, high-speed computer. Four years later, this system was completed and delivered to the Los Alamos National Laboratory, and Cray Research, Inc. was on its way.

The financial contributions from the original owners, which had been appropriate for the highly speculative development stage, was not sufficient to carry on future development and manufacturing plans. So on March 17, 1976, the company sold 660,000 shares of common stock in a successful public offering that netted Cray Research approximately \$10 million.

Going public meant several things to Cray Research. First, the necessary funds were now available to continue with the production and installation of CRAY-1 systems, including support for software development and marketing efforts. Second, the substantial increase in capital made possible the expansion of personnel and facilities to meet objectives for 1976 and beyond. Third, the public offering meant that the company needed a program for investor/shareholder relations. Cray Research

now had a legal obligation to maintain full and timely disclosure about its activities to its shareholders and the public in general.

The importance of disclosure

The Securities and Exchange Commission (SEC) requires that a company comply with the standards of information disclosure. The job of investor relations, however, extends far beyond this one requirement. "Not only do we assure that our communications meet disclosure requirements," explains Bob Gaertner, vice president of human resources and corporate communications, "we also are responsive to the investors' need to understand the company and its stock. We try to communicate with the investment community in a manner that enhances the ability of the market to establish an appropriate value on Cray Research, not unlike the value the company puts on itself."

Keeping our company stock appropriately valued — meaning that it is not priced too high or too low — is important for two reasons. First, because the company provides an employee stock purchase plan, the interest of the employees is at stake as well as the interest of

outside investors. And second, if Cray Research decides to go to the market for additional money for capital expenditure, as was done last spring in the debenture offering, it is much easier when the stock has a solid reputation for being appropriately valued.

Providing Information

In addition to preparing and issuing news releases on orders and earnings, it is the job of the people in investor relations to take all calls from the financial media, portfolio managers, securities analysts, and individual investors. At Cray Research, there are over 2,700 contacts on the company's financial mailing list. On an average day, ten to twenty people call with questions regarding company status. "The most important point to remember," says Laura Merriam, manager of shareholder communications, "is to release accurate and consistent information. If you give out information and then change it drastically the next month, you'll lose credibility, and Wall Street will lose confidence in the company and its stock."

The SEC requires that a company disclose "material" information. Material can be defined as anything that might affect the company stock; a large customer order, a plant opening or closing, quarterly earnings reports, a new product, a product

recall. "I follow the *Prudent Person Rule*," explains Bob Gaertner. "Any information that would cause someone to buy or sell Cray stock needs to be disclosed so that everyone will have equal access to the information."

Everyone at Cray Research has access to sensitive information — information that could affect the company stock. Anytime this information is disclosed — even unintentionally through an innocent conversation with your next-door neighbor — premature stockmarket activity could occur.

The SEC has a method for tracking extremely high and low peaks in trading volume. These peaks are indicators of premature leaks. When a company is suspected of having a premature leak, the New York Stock Exchange (NYSE) will call to check these rumors.

If a leak is found, the company can suffer three major consequences. First, the NYSE may ask the company to make a public announcement because they feel the rumor has created unfair advantage. This premature announcement may be damaging for the company and its prospective customers. Second, the company can be sued by shareholders who have lost money because of unfair advantage. And third, perhaps the most serious consequence, is that a breach in trust between the financial

community and the company can occur.

Cray Research has an excellent reputation with the investment community. It is the job of everyone in the company, however, to maintain this reputation by practicing responsible discretion in our communication regarding the company. It is the role of investor relations to serve the information needs of our constituencies and to maintain fair advantage in the market with timely disclosure of sensitive information.

Investor relations is responsible for a great deal of daily telephone contact with the financial community. Face-to-face communication, however, is a very effective means of conveying a company's financial message. The annual meeting of the shareholders, for example, is a prime opportunity for management to communicate with shareholders — it gives investors an opportunity to meet a broad cross-section of management and to review Cray Research in depth.

Meetings with institutional investors and analyst briefings are also very important — they indicate a company's interest and willingness to communicate fully with the financial community.

Information also is communicated in written form to investors. "Perhaps the most important written element of shareholder

communications is the annual report," comments Laura Merriam. "This report serves a much broader purpose than simply to report the previous year's activities to the financial world; it is also an important means of communication with customers, employees, and potential investors and employees. Quarterly reports also are valuable vehicles of communication. They provide frequent updates on the company and highlight areas and applications that we want people to know about."

The reputation of Cray Research's founder and the visibility of the company's product help create interest in the company and its stock. Because people are interested in the company, it's easier for Bob and Laura to release timely information to the financial public. At the same time, there are many investment opportunities in the financial world and a lot of competition for investment dollars. "We need to do everything we can to keep the stock appropriately valued," continues Laura Merriam. "We do this by being accessible to investors and by providing them with honest and accurate information. Finally, at Cray Research we always tend to underestimate rather than to overstate. We don't want to surprise anyone — but if we have to, it's always better to do so pleasantly!"

News Briefs

CRAY X-MP system installed at Berkeley

Cray Research announced on October 1 that a CRAY X-MP/12 computer system valued at approximately \$7 million has been installed at the University of California at Berkeley. The purchased system will be upgraded to a CRAY X-MP/14 by the end of the year.

According to Dr. Raymond Neff, University Assistant Vice Chancellor, the supercomputer will be used primarily by faculty and students at the Berkeley campus to conduct research in chemistry, physics, and mathematics. The Berkeley computer system is the second Cray installation in the University of California system this year. A CRAY X-MP/48 computer system was installed at the University of California, San Diego in the first quarter of 1986.

U.S. Army to purchase CRAY X-MP/48 and CRAY-2 systems

On October 7, Cray Research announced that the U.S. Army has ordered two Cray computer systems valued at approximately \$42 million. A CRAY X-MP/48 supercomputer with Solid-state Storage Device (SSD) valued at approximately \$19 million will be installed in the first quarter of 1987. A CRAY-2 computer system valued at approximately \$23 million will be installed in the second quarter of 1987. Both systems will be housed at the Army Ballistics Laboratory in Aberdeen, Maryland.

University of West Berlin to receive system

On October 15, Cray Research announced that a West German government-funded research group has ordered a CRAY X-MP/24 computer system valued at approximately \$8 million. Pending export license approval, the purchased system will be installed in the first quarter of 1987 at the Konrad Zuse Zentrum fur Infomationstechnik Berlin (ZIB), part of the University of West Berlin.

The system replaces a CRAY-1/M system in operation since 1984. The new system will be used by universities in Berlin and northern Germany for a wide range of research including computational chemistry, structural analysis, and weather modeling.

401(k) update

As of September 30, 1986, 2,965 people were participating in the Investment Savings 401(k) portion of the Profit Sharing program offered through Cray Research. These participants have contributed approximately \$3,125,065 to the Investment Savings Plan so far this year. By participating in this program, employees authorize Cray Research to put from one to fifteen percent of their pay, before taxes, into the plan. Profits permitting, participants receive 50 cents from Cray Research for each \$1 of their first \$2,000 of savings each year. For further information on registering for this plan, contact your local human resources representative.

Third quarter results

On Oct. 21, Cray Research reported revenue of \$136,579,000 for the third quarter ended September 30. Net earnings were \$26,117,000, and earnings per share were 83 cents. This compares with revenue of \$99,487,000 and net earnings of \$19,093,000, or 63 cents per share, for the same period a year ago.

Revenue for the first nine months of 1986 was \$458,502,000 compared with \$295,417,000 for the first three quarters of 1985. Net earnings were \$101,482,000 versus \$63,571,000 a year ago, and earnings were \$3.24 per share, compared with \$2.10.

During the third quarter, the company installed six new computer systems, all of them purchased. During the first nine months of the year, 26 new systems were installed, three of which were leased. The company's financial results are influenced significantly by the number of computer systems accepted during the period and by whether the systems are purchased or leased.

John Rollwagen said, "We now expect to install 36 new computer systems during 1986, including five leased systems and one for our own use, compared with a total of 28 systems installed last year." He added that growth in computer power delivered would be significantly greater, since customers are ordering larger systems.

Rollwagen added: "We recently set our manufacturing schedule for 1987, and it is based on the

Consolidated Summary of Earnings

Cray Research, Inc. and Subsidiaries
(Unaudited)

| (In thousands, except per share data) | Three months ended September 30 | | Nine months ended September 30 | |
|--|------------------------------------|----------|-----------------------------------|-----------|
| | 1986 | 1985 | 1986 | 1985 |
| Revenue | \$136,579 | \$99,487 | \$458,502 | \$295,417 |
| Operating cost and expenses | 91,611 | 64,474 | 278,268 | 184,024 |
| Operating income | 44,968 | 35,013 | 180,234 | 111,393 |
| Other income | 2,830 | 667 | 6,691 | 3,149 |
| Earnings before income taxes | 47,798 | 35,680 | 186,925 | 114,542 |
| Provisions for income taxes | (21,681) | (16,587) | (85,443) | (50,971) |
| Net earnings | 26,117 | 19,093 | 101,482 | 63,571 |
| Earnings per common and common equivalent share | \$.83 | \$.63 | \$ 3.24 | \$ 2.10 |
| Average number of common and common equivalent shares outstanding | 32,290 | 30,426 | 31,947 | 30,248 |

assumption that installations of new systems will increase to approximately 45 systems."

Rollwagen went on to say, "The re-installation of used computer systems continues to be an important part of meeting customer demand, since these systems typically go to customers obtaining their first super-computer. We now expect to install 11 used systems this year, and we could experience a similar level of activity in 1987.

According to Rollwagen, the company has obtained 30 contracts for computer systems since the start of 1986.

Open enrollment time

"Open Enrollment" for certain 1987 health and benefit programs is being offered November 10-21 this year. You must complete an enrollment form during these dates if you would like to: (1) enroll or make changes in your

medical plan or dependents life insurance coverages, and/or (2) contribute to the Health Care Expense Account plan for 1987. All regular full-time and part-time employees (20 or more hours per week) are eligible to make decisions regarding these plans during open enrollment.

Please note that the enrollment and change options offered during Open Enrollment are not available at any other time during the year, except for new employees (within 31 days of hire) or to add newly acquired dependents (within 31 days of the date acquired). Contact your local human resources representative if you have any questions.

Cray scholarship applications

The application period for Cray's 1987 scholarship program opened November 1. Program brochures and application request forms are available from

Bill Linder-Scholer, Cray Research, Inc., 608 2nd Avenue South, Minneapolis, MN 55402, (612) 333-5889. The actual application packet must be ordered directly from the Citizens' Scholarship Foundation of America, Inc. (CSFA), 1505 Riverview Road, P.O. Box 297, St. Peter, MN 56082, (507) 931-1682. The deadline for application submission is January 15, and awards will be announced early in March.

The Cray Research Scholarship Program provides annual financial scholarship awards to eligible children of Cray employees in the United States. New award winners are chosen each year on the basis of academic merit and extracurricular activity. Selection of the winners and administration of the program are handled by CSFA. For those students who are continuing on Cray scholarships, reapplication is not necessary. CSFA will send out renewal forms in December.

A day for ducks

What do you get when you combine a duck, a fountain, a set of bagpipes, and a lot of volleyball? You get Ducky Day, an annual event at the Software Development facility in Mendota Heights.

The fourth annual Ducky Day, which took place on October 9, was a time for fun, competition, and creativity in Cray Style. The program was commenced by Gabe Shilling, with a resounding peal of his bagpipes. Mark Furtney, master of ceremonies, and judges Gert Sunder, Karalyn Harrington, and George Behnke kept the day organized. Dana Dawson, commissioner of volleyball, coordinated and refereed the volleyball tournament, which consisted of 26 teams playing throughout the day in power and recreational divisions. The tournament was followed by two duck-judging contests — one in water and one on paper.

"The primary benefit of Ducky Day," explains Ron Rumpsa, facility manager, "is that it offers our employees a unique opportunity to interact with their coworkers in a relaxed, fun setting. We hope that as a result, effective work teams will continue to develop."



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